REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1, 3-25, and 73-77 are pending in this application.

35 U.S.C. § 103

Claims 1-8, 10-12, 14-19, 21-23, 25, and 73-75 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,801,937 to Novaes et al. (hereinafter "Novaes") in view of U.S. Patent No. 6,519,615 to Wollrath et al. Applicant respectfully submits that claims 1-8, 10-12, 14-19, 21-23, 25, and 73-75 are not obvious over Novaes in view of Wollrath.

Novaes is directed to method, system and program products for defining nodes to a cluster (see Title). As discussed in the Abstract of Novaes, various components are provided to manage a clustered environment. These components include a System Registry that provides a global data storage; a Configuration manager that stores data locally on nodes of the clustered environment and globally within the System Registry; a Liveness component to provide status of communications paths of the cluster; a Group Services component that provides services to one or more other components of the clustered environment; and a Resource Management component that communicates with one or more resource controllers of the clustered environment.

Wollrath is directed to leasing storage in data processing systems (see, col. 2, lines 35-37). As discussed in the Abstract of Wollrath, a client requests access to storage locations for a period of time (lease period) from a server, such as the file system manager. Responsive to this request, the server invokes a lease period

algorithm, which considers various factors to determine a lease period during which time the client may access the storage locations. After a lease is granted, the server sends an object to the client that advises the client of the lease period and that provides the client with behavior to modify the lease, like canceling the lease or renewing the lease. The server supports concurrent leases, exact leases, and leases for various types of access. After all leases to a storage location expire, the server reclaims the storage location.

With respect to amended claim 1, amended claim 1 recites:

> A multi-tiered management architecture comprising:
> an application development tier at which applications are developed for execution on one or more computers;
> an application operations tier at which execution of the applications is managed; and
> a cluster operations tier to manage the operation of the computers without concern for what applications are executing on the one or more computers, wherein the cluster operations tier is responsible for securing a computer cluster boundary to prevent a plurality of other computers that are not part of the computer cluster from accessing the one or more computers in the computer cluster.

Applicant respectfully submits that no such multi-tiered management architecture is disclosed by Novaes in view of Wollrath.

Claim 1 has been amended to incorporate the elements of dependent claim 2. In the April 21, 2006 Office Action at pp. 3-4, the garbage collection system of Wollrath is cited as disclosing the cluster operations tier of claim 1. As discussed in Wollrath, in general garbage collection uses the notion that resources can be freed for future use when they are no longer referenced by any part of an application (see, col. 3, lines 16-18). Distributed garbage collection extends this notion to the realm of distributed computing, reclaiming resources when no application on any computer refers to them (see, col. 3, lines 18-21). In Wollrath,

a garbage collection cycle is initiated to reclaim resources for which it is determined that either no more references are being made to the resource or that the agreed lease period for the resource has expired (see, col. 8, lines 8-11).

If the garbage collection system of Wollrath is being relied on as teaching the cluster operations tier of amended claim 1, then following the language of amended claim 1, the garbage collection system of Wollrath would need to be responsible for securing a computer cluster boundary to prevent a plurality of other computers that are not part of the computer cluster from accessing the one or more computers in the computer cluster. However, Applicant respectfully submits that nowhere in Wollrath or Novaes is there any discussion or mention of having a garbage collection system be responsible for securing a computer cluster boundary as recited in amended claim 1.

For at least these reasons, Applicant respectfully submits that amended claim 1 is allowable over Novaes in view of Wollrath.

Given that claims 2, 4-8, and 10 depend from claim 1, Applicant respectfully submits that claims 2, 4-8, and 10 are likewise allowable over Novaes in view of Wollrath for at least the reasons discussed above with respect to amended claim 1.

With respect to claim 3, claim 3 depends from amended claim 1 and Applicant respectfully submits that claim 3 is allowable over Novaes in view of Wollrath at least because of its dependency on amended claim 1. Furthermore, claim 3 recites:

> A management architecture as recited in claim 1, wherein the application operations tier is responsible for securing sub-boundaries within the computer cluster boundary to restrict communication between computers within the computer cluster.

Applicant respectfully submits that Novaes in view of Wollrath does not disclose any such application operations tier responsible for securing sub-boundaries within the computer cluster boundary as recited in claim 3.

In the April 21, 2006 Office Action at p. 4, Novaes at col. 6, lines 19-30, is cited as teaching claim 3. The cited portion of Novaes discusses a Group Services component that provides generic membership services to the other components (see, col. 6, lines 19-20). Although the cited portion does mention that the Group Services component includes facilities with which the members of a group can control membership to the group and maintain a group state (see, col. 6, lines 22-24), there is no discussion or mention in the cited portion of Novaes that a group of Novaes establishes a sub-boundary within a computer cluster boundary to restrict communication between computers within the computer cluster. Simply mentioning controlling membership to a group and a group state does not disclose securing sub-boundaries within the computer cluster boundary to restrict communication between computers within the computer cluster. Accordingly, Applicant respectfully submits that Novaes cannot disclose wherein the application operations tier is responsible for securing sub-boundaries within the computer cluster boundary to restrict communication between computers within the computer cluster as recited in claim 3.

With respect to Wollrath, Wollrath is not cited as curing, and does not cure, these deficiencies of Novaes. Accordingly, for at least these reasons, Applicant respectfully submits that claim 3 is allowable over Novaes in view of Wollrath.

With respect to claim 11, claim 11 depends from amended claim 1 and Applicant respectfully submits that claim 11 is allowable over Novaes in view of Wollrath at least because of its dependency on amended claim 1. Furthermore, claim 11 recites:

> A management architecture as recited in claim 1, wherein the cluster operations tier takes corrective action in response to a hardware failure of one of the computers.

Applicant respectfully submits that no such cluster operations tier is disclosed by Novaes in view of Wollrath.

As discussed above, the garbage collection system of Wollrath is cited as disclosing the cluster operations tier of claim 1. If the garbage collection system of Wollrath is being relied on as teaching the cluster operations tier of amended claim 1, then following the language of claim 11 the garbage collection system of Wollrath would need to take corrective action in response to a hardware failure of one of the computers. However, Applicant respectfully submits that nowhere in Wollrath or Novaes is there any discussion or mention of having a garbage collection system take corrective action in response to a hardware failure of one of the computers. Accordingly, Applicant respectfully submits that Novaes in view of Wollrath cannot disclose or suggest the cluster operations tier as recited in claim 11. For at least these reasons, Applicant respectfully submits that claim 11 is allowable over Novaes in view of Wollrath.

Given that claims 12 and 14 depend from claim 11, Applicant respectfully submits that claims 12 and 14 are likewise allowable over Novaes in view of Wollrath for at least the reasons discussed above with respect to claim 11.

With respect to claim 15, claim 15 recites:

A co-location facility system comprising:

a plurality of node clusters each corresponding to a different customer; and

a cluster operations management console corresponding to at least one of the node clusters and configured to manage hardware operations of the at least one node cluster.

Applicant respectfully submits that no such co-location facility system is disclosed by Novaes in view of Wollrath.

In the April 21, 2006 Office Action at p. 7, Novaes at col. 4, lines 55-65 is cited as teaching a plurality of node clusters each corresponding to a different customer as recited in claim 15. The cited portion of Novaes discusses cluster membership and that cluster membership can be viewed as a list of nodes (see, col. 4, lines 54-55). The cluster membership refers to the fact that a node is considered to be a member of the cluster when it is defined and operational (see, col. 4, lines 44-47). However, nowhere in this discussion of cluster membership is there any mention of each of a plurality of node clusters corresponding to a different customer. A search through Novaes for "customer" shows that the word "customer" does not appear in this cited portion or anywhere else of Novaes. Without any discussion or even mention of node clusters corresponding to different customers, Applicant respectfully submits the Novaes cannot disclose a plurality of node clusters each corresponding to a different customer as recited in claim 15.

With respect to Wollrath, Wollrath is not cited as curing, and does not cure, these deficiencies of Novaes. For at least these reasons, Applicant respectfully submits that claim 15 is allowable over Novaes in view of Wollrath.

Given that claims 16-19 and 21-23 depend from claim 15, Applicant respectfully submits that claims 16-19 and 21-23 are likewise allowable over Novaes for at least the reasons discussed above with respect to claim 15.

With respect to claim 25, claim 25 depends from claim 15 and Applicant respectfully submits that claim 25 is allowable over Novaes in view of Wollrath at least because of its dependency on claim 15. Furthermore, claim 25 recites:

> A system as recited in claim 15, wherein one or more of the nodes in a node cluster are leased by the customer from an operator of the co-location facility.

Applicant respectfully submits that no such leasing of one or more nodes in a node cluster is disclosed by Novaes in view of Wollrath.

In the April 21, 2006 Office Action at p. 8, Novaes at col. 3, lines 35-50 is cited as teaching wherein one or more of the nodes in a node cluster are leased by the customer from an operator of the co-location facility as recited in claim 25. The "negotiated" aspects of this portion of Novaes are relied on as teaching the lease aspects of claim 25. However, the cited portion of Novaes discusses that if resources are to be shared, then the operating system copies negotiate the access such that the integrity of the resources is preserved (see, col. 3, lines 44-49). As an example, Novaes discusses that two copies of an operating system which need to write multiple blocks of data to a certain segment of a storage device negotiate the access to the segment, otherwise the order of the writing operations may compromise the integrity of the data being written (see, col. 3, lines 49-53).

Thus, it can be seen that the negotiation discussed in the cited portion of Novaes is directed to negotiation performed by the operating system copies in order to maintain the integrity of resources when those resources are shared.

There is no discussion or mention in Novaes of nodes in the clustered environment being leased, much less of the nodes being leased by a customer from an operator of a co-location facility. Accordingly, Applicant respectfully submits that Novaes cannot disclose wherein one or more of the nodes in a node cluster are leased by the customer from an operator of the co-location facility as recited in claim 25.

With respect to Wollrath, Wollrath is not cited as curing, and does not cure, these deficiencies of Novaes. For at least these reasons, Applicant respectfully submits that claim 25 is allowable over Novaes in view of Wollrath.

With respect to claim 73, claim 73 recites:

> A multi-tiered computer management architecture comprising:
>
> a first tier corresponding to an owner of a computer;
>
> a second tier corresponding to a hardware operator that is to manage hardware operations of the computer;
>
> a third tier corresponding to a software operator that is to manage software operations of the computer; and
>
> a fourth tier corresponding to the owner, wherein the owner operates in the fourth tier except when revoking the rights of the hardware operator or software operator.

Applicant respectfully submits that no such multi-tiered computer management architecture is disclosed by Novaes in view of Wollrath.

Applicant respectfully submits that there is no disclosure in Novaes of a fourth tier corresponding to an owner, wherein the owner operates in the fourth tier except when revoking the rights of the hardware operator or software operator. Nowhere in Novaes is there any discussion or mention of a four-tier management architecture with an owner operating in one of the tiers except when revoking the rights of a hardware operator or software operator. Without any such discussion or mention, Applicant respectfully submits that Novaes cannot disclose a fourth

tier corresponding to the owner, wherein the owner operates in the fourth tier except when revoking the rights of the hardware operator or software operator as recited in claim 73.

Furthermore, in the April 21, 2006 Office Action at p. 9, the Resource Manager process of Novaes is cited as teaching the fourth tier as recited in claim 73. The Resource Management component of Novaes provides a basic communications layer to other cluster services, which are not part of the core cluster services (see, col. 6, lines 30-32). Nowhere in Novaes is there any discussion or mention of an owner operating in this Resource Management component except when revoking the rights of the hardware operator or the software operator. Without any such discussion or mention, Applicant respectfully submits that the Resource Manager of Novaes cannot disclose a fourth tier corresponding to the owner, wherein the owner operates in the fourth tier except when revoking the rights of the hardware operator or software operator as recited in claim 73.

With respect to Wollrath, Wollrath is not cited as curing, and does not cure, these deficiencies of Novaes. For at least these reasons, Applicant respectfully submits that claim 73 is allowable over Novaes.

Given that claims 74 and 75 depend from claim 73, Applicant respectfully submits that claims 74 and 75 are likewise allowable over Novaes for at least the reasons discussed above with respect to claim 73.

Claims 9 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Novaes and Wollrath in view of U.S. Patent No. 6,801,937 to Hipp.

Applicant respectfully submits that this rejection of claims 9 and 13 is not clear because it is not clear what the "Hipp" reference is. The "Hipp" reference is cited as being U.S. Patent No. 6,801,937, but U.S. Patent No. 6,801,937 is Novaes and does not list any inventor by the name of Hipp. Furthermore, the "Hipp" reference is cited as disclosing "sound an alarm", and Applicant has not been able to find such language at the cited portion of, or elsewhere in, U.S. Patent No. 6,801,937.

If this rejection of claims 9 and 13 is maintained, Applicant again respectfully requests that the rejection be clarified to identify the "Hipp" reference.

Claims 20, 24, and 76 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Novaes and Wollrath in view of U.S. Patent No. 6,529,953 to Van Renesse (hereinafter "Van Renesse"). Applicant respectfully submits that claims 20, 24, and 76 are not obvious over Novaes and Wollrath in view of Van Renesse.

With respect to claim 20, claim 20 depends from claim 19 and Applicant respectfully submits that claim 20 is allowable over Novaes in view of Wollrath at least because of its dependency on claim 19. Van Renesse is not cited as curing, and does not cure, the deficiencies of Novaes in view of Wollrath as discussed above with respect to claim 19. For at least these reasons, Applicant respectfully submits that claim 20 is allowable over Novaes and Wollrath in view of Van Renesse.

With respect to claim 24, claim 24 depends from claim 15 and Applicant respectfully submits that claim 24 is allowable over Novaes in view of Wollrath at least because of its dependency on claim 15. Van Renesse is not cited as curing,

and does not cure, the deficiencies of Novaes in view of Wollrath as discussed above with respect to claim 15. For at least these reasons, Applicant respectfully submits that claim 24 is allowable over Novaes and Wollrath in view of Van Renesse.

With respect to claim 76, claim 76 depends from claim 73 and Applicant respectfully submits that claim 76 is allowable over Novaes in view of Wollrath at least because of its dependency on claim 73. Van Renesse is not cited as curing, and does not cure, the deficiencies of Novaes in view of Wollrath as discussed above with respect to claim 73. For at least these reasons, Applicant respectfully submits that claim 76 is allowable over Novaes and Wollrath in view of Van Renesse.

Applicant respectfully requests that the §103 rejections be withdrawn.

New Claims

New claim 77 is added. New claim 77 depends from claim 15 and Applicant respectfully submits that new claim 77 is allowable over the cited references for the reasons discussed above with respect to claim 15. Furthermore, Applicant respectfully submits that the cited references do not disclose or suggest a system as recited in claim 15, wherein the cluster operations management console is configured to manage hardware operations of the at least one node cluster without concern for what applications are executing on nodes of the node cluster, and wherein the cluster operations management console is responsible for securing a node cluster boundary to prevent a plurality of other nodes that are not part of the at least one node cluster from accessing the nodes of the at least one

node cluster as recited in claim 77. For at least these reasons, Applicant respectfully submits that claim 77 is allowable over the cited references.

Conclusion

Claims 1, 3-25, and 73-77 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. Should any matter in this case remain unresolved, the undersigned attorney respectfully requests a telephone conference with the Examiner to resolve any such outstanding matter.

Respectfully Submitted,

Date: 10/18/06

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